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United States Patent [19]

Zhao

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[54] **APPARATUS AND METHOD FOR
GENERATING PRESSURE CHANGES IN A
MAMMALIAN ORAL/THROAT CAVITY**

5,803,066 9/1998 Rapoport et al. 128/204.23
5,873,361 2/1999 Hakala 128/204.23
5,875,777 3/1999 Eriksson 128/204.21

[76] **Inventor:** Hongwei Zhao, 977 Thompson Blvd.,
Windsor Ontario N8S 2G7, Canada

Primary Examiner—John G. Weiss

Assistant Examiner—Charles W. Anderson

Attorney, Agent, or Firm—Harness, Dickey & Pierce, P.L.C.

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[57] **ABSTRACT**

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[52] **U.S. Cl.** 128/204.23; 128/204.21;
600/529

[58] **Field of Search** 128/204.23, 204.21,
128/204.22, 200.24, 202.16, 205.19, 848;
600/529, 543

Predetermined pressure changes in the oral and throat cavity is achieved by inducing at least a partial vacuum in the mouth and throat area of a mammal in temporal coordination with the mammal's breathing pattern. The partial vacuum is selectively applied to the mouth and throat cavity only during inhalation cycles of the breathing pattern. A further aspect of the invention provides for additionally inducing a positive or atmospheric pressure in the mouth and throat cavity only during exhalation cycles of the breathing pattern.

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,632,281 5/1997 Rayburn 128/719

12 Claims, 3 Drawing Sheets

